Discomfort and pain during mammography: description, prediction, and prevention

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Abstract

***Objective*—To identify the nature of pain and discomfort experienced during mammography and how it can be ameliorated.**

***Design*—Questionnaire survey before invitation for mammography and immediately after mammography. Responses before screening were related to experience of discomfort.**

***Setting*—Health district in South East Thames region.**

***Subjects*—1160 women aged 50-64 invited routinely for screening; 774 completed first questionnaire, of whom 617 had mammography. 597 completed the second questionnaire.**

***Main outcome measures*—Reported discomfort and pain, comparisons of discomfort with that experienced during other medical procedures, qualitative description of pain with adjective checklist.**

***Results*—35% (206/597) of the women reported discomfort and 6% (37/595) pain. 10 minutes after mammography these figures were 4% (24/595) and 0·7% (4/595) respectively. More than two thirds of women ranked having a tooth drilled, having a smear test, and giving blood as more uncomfortable than mammography. The most important predictor of discomfort was previous expectation of pain (discomfort was reported by 21/32 (66%) women who expected pain and 186/531 (35%) who did not). Discomfort had little effect on satisfaction or intention to reattend.**

***Conclusions*—The low levels of reported pain and discomfort shortly after mammography and the favourable comparisons with other investigations suggest that current procedures are acceptable. Since two thirds of the women experienced less pain than expected health education and promotion must ensure that accurate information is made available and publicised.**

On behalf of the University of Kent at Canterbury Breast Cancer Screening Group

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BMJ 1992;305:443-5

Introduction

The national breast screening programme is nearing the end of its first three year cycle. The success of the programme largely hinges on a high level of uptake and continued compliance by the target population, which in turn depends on whether the population finds the service acceptable. The University of Kent at Canterbury breast screening group recently completed a prospective study of more than 3000 women in three centres in the South East Thames region to examine users' responses to and satisfaction with the service.[1] Our results showed that 40% of attenders experienced discomfort, while 13% reported frank pain. There were considerable differences in experience of pain among areas—for example, discomfort was reported by under 30% of respondents in the rural area but almost 60% in the inner city—and a wide range of values has been reported in other studies.[2-5]

Differences in reported experiences of pain occur partly because the procedures and other aspects of the services differ, and partly because of variations in methods of study. Overall, however, there seems to be a serious problem, and one of the immediate concerns is that discomfort may discourage future attendance, both by the woman herself and by others. We therefore decided to study pain associated with mammography. We had four aims: to determine the proportion of women who report discomfort and pain, to measure the quality of the discomfort or pain; to determine what would cause women to complain, the procedures or aspects of women's physical or psychological characteristics; and to examine the implications of our findings for modifying screening procedures and perhaps for improving health education and promotion.

Subjects and methods

The study sample came from a single screening batch in a health district in South East Thames Regional Health Authority—not one of the districts we had studied previously.[1] All the women were screened in a mobile unit. Shortly before the invitation to screening was sent out 1160 women received a postal questionnaire from us. The questions covered: the respondent's current health and previous health behaviours, including attendance for cervical screening and mammography; her trait and state anxiety levels, measured by Spielberger's state-trait anxiety inventory[6]; whether she intended to accept the invitation to attend and what obstacles to attendance she foresaw; her expectations about the procedures and the staff; her knowledge and beliefs about breast cancer, including how vulnerable she perceived herself to be; background demographic information; and information about her physical build, including bust size and weight.

Immediately after the woman had dressed at the end of mammography, an interviewer sat with her and asked her to complete a three sided questionnaire about her experiences. The questions covered discomfort or pain experienced during the procedures, discomfort or pain still experienced at the time of completing the questionnaire, how the experience compared with the discomfort expected from screening and felt during other medical procedures, and characterisation of pain with a series of 16 adjectives we provided from the McGill pain inventory.[7] There were two additional measures: whether the woman was pleased she had attended for screening; and whether she intended to return when she received her next invitation in three years' time.

Results

Of the 1160 women approached, 774 completed the first questionnaire (67%); 617 of the 774 attended for

mammography (80%). All but 22 of the 774 women were postmenopausal. Of the 617 women who attended for screening, 597 completed the second questionnaire (97% response rate).

EXTENT OF DISCOMFORT

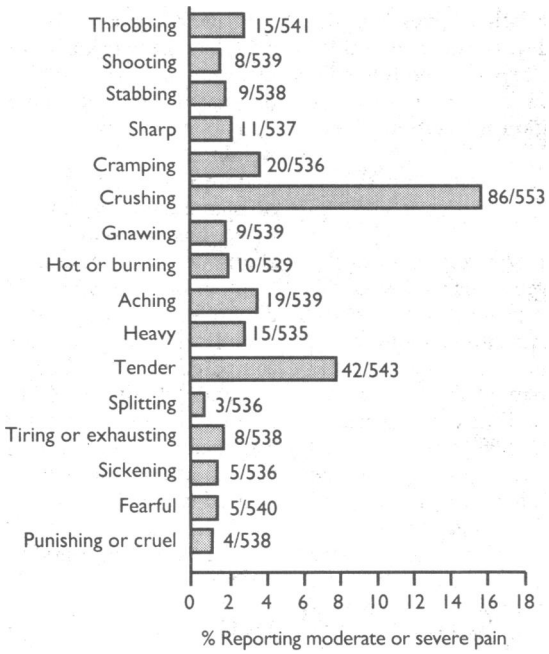
Table I shows the levels of discomfort and pain. Discomfort was experienced by 206 of the 597 women during mammography and 37 of 595 reported pain. By the time the questionnaire was completed, however, between five and 10 minutes after the screen, only 24 of 595 were still experiencing discomfort and four of 595 pain. All but 22 of the women said they were pleased they had attended and only 21 did not intend to return next time. Correlations between discomfort and pain on the one hand and satisfaction and intention to reattend on the other were small and accounted for no more than 5% of the variance.

TABLE I—*Discomfort and pain recorded by 597 women after mammography and satisfaction and intention to return*

	No responding to question	No (%) responding yes or definitely yes
Discomfort	597	206 (35)
Pain	595	37 (6)
Discomfort after 5-10 min	595	24 (4)
Pain after 5-10 min	595	4 (0·7)
Pleased came	575	553 (96)
Intention to return	573	552 (96)

CHARACTERISTICS OF DISCOMFORT

Table II shows the comparisons the respondents drew between the discomfort they experienced and what they had expected during screening and had experienced during other medical procedures. Most women (402/593) reported that the discomfort of screening was less or much less than they had expected. The rank order of pain or discomfort associated with medical procedures was having a tooth drilled, having a cervical smear test, giving a blood sample, undergoing mammography, and having blood pressure measured. Mammography was thus preferable to all but the last. The adjectives respondents used most often to describe the pain they had felt were crushing and tender (figure), but the proportion of women who reported moderate or severe pain on the other dimensions was generally no more than 2%.



Numbers of women describing moderate or severe pain of different types

TABLE II—*Comparison of discomfort during mammography with discomfort during other procedures and expected discomfort*

	No responding	No (%) experiencing less or much less discomfort during mammography
Tooth drilled	593	530 (89)
Smear test	563	425 (75)
Blood sample	580	382 (66)
Blood pressure	590	277 (47)
Expected discomfort	593	402 (68)

PREDICTORS OF DISCOMFORT

We tested whether reported discomfort after mammography could be predicted from any of the measures taken before screening: weight and bust size, demographic background, current health status and previous health behaviours, anxiety and perceived vulnerability to breast cancer, expectations about the procedures, and intention to attend. There were four significant predictors (Table III): having educational qualifications; having previous clinical breast examinations; and expecting that mammography would cause discomfort or pain. The effect of education was to be expected since it is commonly reported with medical interventions. The effect of previous experience of clinical breast examinations probably occurred because examinations other than mammography cause little discomfort and can lead to unduly optimistic expectations about mammography. The effects of expectations about discomfort and pain, especially pain, were unexpected. Two thirds of women who reported discomfort had said before screening that they expected the procedure to cause pain, against only one third who had said they did not expect pain. Expectation of pain was thus the most important of the measures taken.

TABLE III—*Predictors of reported discomfort at mammography*

	No of respondents	No (%) experiencing discomfort or unsure	χ^2 value
Education			
Qualifications	252	108 (43)	7·7**
No qualifications	273	85 (31)	
Previous breast examination			
Yes	293	120 (41)	5·3*
No or unsure	304	97 (32)	
Discomfort expected			
Yes	164	72 (44)	4·7*
No or unsure	412	141 (34)	
Pain expected			
Yes	32	21 (66)	12·2***
No or unsure	531	186 (35)	

*p<0·05, **p<0·01, ***p<0·001. Weight and bust size, health status, anxiety, and perceived vulnerability to cancer did not predict pain or discomfort. The correlation between discomfort and overall satisfaction was −0·14 (p<0·001) and between discomfort and intention to return in three years was −0·15 (p<0·001). Correlation between satisfaction and intention to return was 0·83 (p<0·001).

Discussion

Discomfort during radiography was reported by roughly one third of respondents, and 6% reported frank pain—figures which were similar to those in our earlier study.[1] For most women, however, the discomfort disappeared within five to 10 minutes after radiography, suggesting that the effects were generally short lived. This possibility seems to have been overlooked by previous research. Virtually all the respondents were pleased they had attended and said they would return, and neither measure was appreciably affected by whether discomfort or pain had been experienced.

Comparisons showed that mammography caused less discomfort than expected for two thirds of respondents, and ranked much like having blood pressure taken. For most women, giving a blood

sample, having a cervical smear, and having a tooth drilled all caused more discomfort than mammography.

The most important measure for predicting discomfort was expectation of pain. What the woman brings to mammography, psychologically, seems to be of greater importance than anything else we measured. Bust size, which folklore has sometimes implicated, played no part.

Since pain and discomfort were generally short lived, were less than experienced with other routine procedures, and had little effect on dissatisfaction they are unlikely to affect reattendance rates. It is important, however, to continue to monitor reattendance. The finding that two thirds of the women experienced less discomfort than they had expected has implications for attendance. Most women have no personal experience of mammography and so build their expectations on whatever information they have available. The risk is that only the most available and readily recalled information will be used—typically negative reports from newspaper and television features—and that positive reports will be overlooked. Since expectation of pain was an important predictor of experience it is important that health education and promotion try to ensure that accurate and representative information is made available and publicised. Attendance for breast screening is known to be affected by whether the woman believes those around her want her to attend,[1] and relatives and friends who have had mammography may have an important part to play in encouraging positive expectations.

We thank the women who took part in the study, the radiographers and coordinators who accommodated our research, and the staff of the family health services authority who supplied the lists of names. The project was funded by the National Breast Screening Programme.

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(Accepted 16 June 1992)

Time delays in provision of thrombolytic treatment in six district hospitals

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Abstract

***Objective*—To measure the delays between onset of symptoms and admission to hospital and provision of thrombolysis in patients with possible acute myocardial infarction.**

***Design*—Observational study of patients admitted with suspected myocardial infarction during six months.**

***Setting*—Six district general hospitals in Britain.**

***Subjects*—1934 patients admitted with suspected myocardial infarction.**

***Main outcome measures*—Route of admission to hospital and time to admission and thrombolysis.**

***Results*—Patients who made emergency calls did so sooner after onset of symptoms than those who called their doctor (median time 40 (95% confidence interval 30 to 52) minutes *v* 70 (60 to 90) minutes). General practitioners took a median of 20 (20 to 25) minutes to visit patients, rising to 30 (20 to 30) minutes during 0800-1200. The median time from call to arrival in hospital was 41 (38 to 47) minutes for patients who called an ambulance from home and 90 (90 to 94) minutes for those who contacted their doctor. The median time from arrival at hospital to thrombolysis was 80 (75 to 85) minutes for patients who were treated in the cardiac care unit and 31 (25 to 35) minutes for those treated in the accident and emergency department.**

***Conclusion*—The time from onset of symptoms to thrombolysis could be reduced substantially by more effective use of emergency services and faster provision of thrombolysis in accident and emergency departments.**

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BMJ 1992;305:445-8

Introduction

Delays in the admission and treatment of patients with acute myocardial infarction have been recognised for over 20 years.[1-3] Intravenous thrombolytic treatment reduces mortality after acute myocardial infarction,[4-6] and the expectation that early treatment should be more beneficial than that given after six hours is supported by large clinical studies,[7-9] the results of which have produced a new impetus for the rapid evaluation and treatment of patients with suspected acute myocardial infarction.

Studies of thrombolysis before arrival at hospital are in progress,[10-12] but it is unlikely that this will find widespread applicability in the near future. We examined the time from the onset of symptoms to hospital admission and to the administration of thrombolysis in 1934 patients admitted to six district general hospitals with probable acute myocardial infarction. The overall delay was broken down into component times to explore means by which these delays could be shortened.

Methods

Data were collected continuously for six to eight months from six hospitals on all patients admitted with suspected acute myocardial infarction (table I). This group of hospitals provided a wide range of catchment population. In one hospital (Doncaster) data were

TABLE I—*Origin of patients included in the study*

	Catchment population	No of patients with possible infarction
Northampton	315 000	431
Brighton	340 000	267
Bath	400 000	445
Telford	200 000	293
Doncaster	290 000	330
Merthyr Tydfil	150 000	168
Total	1 695 000	1934